Appl. No. 10/734,536
Atty.Docket No. 7858MD
Amdt. Dated August 28, 2006
Reply to Final Office Action Dated July 14, 2006
Customer Number 27752

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REMARKS

Claim Status

Claim 4 is amended to replace the term "diphosphonate modified polyacrylic acid" with poly (diphosphonate/acrylate) to more clearly designate the polymeric material as a copolymer of diphosphonate with acrylate and for consistency with the material specified in Example VIII.

No new matter is involved with the amendments to the claims. Consequently entry of these changes is believed to be in order and is respectfully requested.

Method Claims 7 to 9 have been withdrawn as non-elected claims. However, as indicated by the Examiner, should the compositions of Claims 1 to 6 be found allowable, Claims 7 to 9 would be rejoined in accordance with the provisions of MPEP § 821.04, if the claims depend from or include all the limitations of the patentable compositions. Claim 7 has been amended to include all the limitations of Claim 1. Claims 8 and 9 depend from Claims 1 and 5 respectively.

Claims Rejection Under 35 U.S.C. §102(e) and §102(b)

The rejections of Claims 1, 2, 5 and 6 under 35 USC §102(e) as being anticipated by Glandorf (US 6,187,295) and of Claims 1 to 6 under 35 USC §102(b) as being anticipated by Zerby et al. (US 5,451,401) have been maintained. It is contended that both Glandorf and Zerby disclose species of polymers encompassed by Applicants' claims and that these polymers will inherently have the present claimed characteristics and provide the benefits. Specifically, the Examiner points to the use of polyethylene glycol in Glandorf's compositions and of carboxymethyl cellulose in combination with "polyphosphonates" in Zerby.

Applicants respectfully traverse the rejections, because neither Glandorf nor Zerby disclose the present polymeric materials having the chemical structural features and activity.

With respect to Glandorf (US 6,187,295), it is asserted that this reference discloses polyethylene glycol incorporated in the compositions and that polyethylene glycol is

encompassed in the claimed polymers. It is respectfully submitted that polyethylene glycol IS NOT a species of the present claimed polymers, all of which contain repeating units with anionic groups, specifically carboxy, phosphonate, phosphate and mixtures thereof. Polyethylene glycol (PEG) has the structure $H(OCH_2CH_2)_nOH$, i.e., the repeating units are ethoxy units terminated by a hydroxy group. Polyethylene glycol has no carboxy, phosphonate, or phosphate groups. Therefore, polyethylene glycol itself is not among the claimed polymers nor is polyethylene glycol believed to have the claimed functionality. However, the present claim includes copolymers of polyethylene glycol with a monomer or polymer containing phosphate or phosphonate groups. Such copolymers would have the required structure to provide substantivity or reactivity to teeth, to increase hydrophilic character and to decrease pellicle film thickness.

Regarding Zerby (US 5,451,401), Applicants respectfully disagree with the Examiner's assertion that Zerby discloses polymeric phosphonates of Formula (I) and (II) as listed in Col. 4. The compounds disclosed by Zerby all contain multiple phosphonate groups, i.e., from 3 to 10, but NONE ARE POLYMERIC, i.e., none have repeating monomer units. The phosphonate compounds disclosed by Zerby are nonpolymeric carbon compounds having multiple (up to 10) phosphonate substituents attached to one or more carbons in the chain. For example, decane-1,2,3,4,5,6,7,8,9,10-decaphosphonic acid has 10 phosphonate group substituents, one on each of the 10 carbons in the alkyl chain. It is respectfully submitted that such compound is NOT polymeric in structure, because it does not have repeating monomer units and it is not prepared by propagating or condensing together such monomer units. The use of the nomenclature "polyphosphonates" in Zerby does not designate polymers, only that the compounds contain 3 to 10 phosphonate groups. By contrast, the present claimed polyphosphonates are polymeric and have the required substantivity to teeth to deposit a conditioning film that increases hydrophilic character and decreases pellicle film thickness. For example among the present claimed polymers is poly (diphosphonate/acrylate) which is a copolymer having repeating units derived from acrylate and diphosphonate and having substantivity to teeth and surface modifying activity.

It is further pointed out in the Office Action that Zerby teaches that various anionic polymeric polycarboxylates and their complexes may be used in dental compositions. In particular, it is stated that carboxymethyl cellulose (CMC) is included in Zerby's compositions and together with the polyphosphonates are present in amounts encompassed by the present claims. As discussed above, Zerby does not disclose a polymeric phosphonate. It is further asserted that CMC is encompassed among the polymers in Claim 1, as CMC is a carboxy-substituted polymer. It is respectfully submitted that while the present claim does include carboxy-substituted polymers, the claim is specific to such carboxy-substituted polymers that are substantive to teeth and modify teeth to be hydrophilic and to decrease pellicle film thickness. There is no disclosure whatsoever in Zerby that CMC or any other carboxylated polymer would have these properties and functionality when used at levels of from 1% to 35%. The only teaching in Zerby is to incorporate CMC at 0.3%, which is well known practice in the art for CMC and other cellulose derivatives as thickening agents in dental compositions. Nothing in Zerby teaches or suggests that CMC may be used in dental compositions for any other purpose.

In summary, neither cited reference discloses the present claimed anionic polymers present in an amount sufficient to deposit a surface conditioning film onto teeth, that such deposited film would result in increased hydrophilicity of the tooth surface and would decrease pellicle film thickness and that such modification of teeth would provide consumer desirable clean teeth and smooth teeth perception that would last for extended periods of time. Thus, there are no materials that would inherently provide the present claimed benefits of providing increased hydrophilic character to oral surfaces in order to provide consumer preferred mouth feel characteristics.

Therefore the rejections under 35 USC §102(e) and §102(b) should be withdrawn.

Obviousness-Type Double Patenting Rejection

In the interest of advancing prosecution of this case, Applicants are prepared to file a terminal disclaimer to commonly-assigned US 6,821,507 upon indication of allowable

claims. This should overcome the obviousness-type double patenting rejection of present claims 1 to 6 over Claims 1, 3 and 4 of the patent.

CONCLUSION

Applicants have made an earnest effort to place their application in proper form and to distinguish the invention as now claimed from the applied references. In view of the foregoing, reconsideration of this application, entry of the amendments presented, withdrawal of the claims rejection under 35 USC §102(b) and §102(e), withdrawal of the nonstatutory double-patenting rejection, withdrawal of the restriction requirement and rejoining of method Claims 7 to 9 and allowance of all claims are respectfully requested.

The Examiner is respectfully invited to telephone the undersigned representative if she believes an interview might be useful to advance prosecution of this case.

Respectfully submitted,
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